

### **REMARKS**

In the Action, claims 2, 5-7 and 9-12 are rejected. In response, claims 2 and 9-12 are cancelled, and new claims 19-24 are added.

New claim 19 corresponds substantially to claim 5 and is directed to a method of producing a coated paper by applying a coating color using a transfer roll coater at a coating weight of at least 7 g/m<sup>2</sup> where the coating color comprises an adhesive in an amount of 5 to 50 parts by weight, an auxiliary consisting essentially of polyvinyl alcohol in an amount of 0.1 to 1.0 parts by weight, and a starch in an amount of 2 parts by weight or less, where the parts by weight are based on 100 parts by weight of the pigment. Claim 20 depends from claim 19 and recites the amount of adhesive being 18 parts by weight or less as disclosed on page 10, line 7. Claim 21 recites the starch being included as an adhesive, and claim 22 recites the specific adhesives as disclosed in the specification. Claim 23 recites the solids content of the color coating, while claim 24 recites the transfer roller including an inner roller, an outer roller and an applicator roller, where the peripheral speed of the inner roller and outer roller to the applicator roller is 50-95% and where the color coating is applied at a coating speed of at least 1000 m/min substantially without misting or boiling as disclosed on page 13 of the specification. These features are not disclosed in the art of record.

In view of these amendments and the above comments, reconsideration and allowance are requested.

### **The Rejections**

The claims are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description. The rejection is based on the position that the specification does not disclose applying the coating color with a gate roll coater as recited in claim 5.

Applicants respectfully submit that the transfer roll coater disclosed on page 13 of the specification is inherently a gate roll coater. A gate roll coater differs from the KCM coater which has an applicator roll, a distributing roll, and a metering roll where the size of the distributing roll is smaller than the other two rolls. Thus, one skilled in the art would recognize that the transfer roll coater as described in the specification is a gate roll coater. Accordingly, the recitation of a gate roll coater in claim 5 is inherently supported by the specification as originally filed and does not contain new matter. Applicants respectfully request this rejection be withdrawn.

The claims are also rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,197,155 to Wurster et al. in view of U.S. Patent No. 5,972,167 to Hayasaka et al., and JP 11-050392. Wurster et al. is cited for disclosing a coated paper containing a color coating which includes polyvinyl alcohol, an adhesive and a starch. Hayasaka et al. is cited for disclosing a gate roll coater. JP '392 is also cited for disclosing a gate roll coater. Page 9 of the Action refers to a rejection of the claims over Wurster et al. in view of JP '392. This rejection appears to be substantially the same as the rejection in paragraph 7 on page 4 of the Action.

The combination of the cited patents does not disclose the claimed method of producing a coated paper with the claimed coating color applied by a gate roll coater at a coating speed of 1100 m/min or more where the peripheral speed ratio of the inner roll and the outer roll to the applicator roll is 50-95%. The present invention is directed to the use of the combination of polyvinyl alcohol and a starch which provide advantageous effects that are not disclosed in the cited patents. As disclosed on pages 6 and 7 of the specification, the coating color containing polyvinyl alcohol and a starch in the claimed amounts provide good coating runnability and excellent printability and blister resistance for web offset printing.

Blistering, misting and splashing or boiling are common problems at high coating speeds because of the continuous rotation of the inner and outer roll.

Applicants found that amount of polyvinyl alcohol greater than 2 parts by weight increase the coating viscosity to an unacceptable level. Thus, the prior processes require lowering the solid content of the coating color to lower the viscosity. Increasing the coating weight of a low density coating color by a transfer coating requires the absolute weight of the coating color on the applicator roll be increased. A low solids coating color at an increased coating weight on the applicator roll results in scattering and misting of the coating color on the roller. Applicants have found that a coating color containing a pigment and an adhesive where the coating color contains 0.1 parts by weight to less than 2 parts by weight of polyvinyl alcohol and starch in an amount of less than 2.0 parts by weight per 100 parts by weight of the pigment is able to overcome the disadvantages of the prior processes without reducing the coating weight. The coating color as defined in the claimed invention when applied by a gate roll coater or a transfer roll coater minimizes misting and boiling without increasing the absolute coating weight.

The coating color of the invention avoids the misting and boiling at a high coating speed of 1000 m/min or more, and at 1100 m/min or more as disclosed on page 13, lines 9-12. A high coating speed of 1100 m/min or more can be attained under the peripheral speed ratio of the inner roll and outer roll to the applicator roll of 50-95% by the use of a coating color containing 0.1 to 1.0 parts by weight polyvinyl alcohol and less than 2.0 parts by weight of a starch based on 100 parts by weight of the pigment as recited in claim 5. The art of record does not disclose or suggest the combination of these features.

Hayasaka et al. and JP '392 do not provide the deficiencies of Wurster et al. Hayasaka et al. does not disclose or suggest the use of polyvinyl alcohol as an auxiliary in a coating color as in the claimed invention. Hayasaka et al. discloses a starch latex copolymer


used as a binder in an amount of 20-50 wt% based on the pigment. Thus, Hayasaka et al. is an example of the prior coating colors having large amounts of a starch. As disclosed on pages 9 and 10 of the present specification, coated papers containing more than 2 parts by weight of a starch are not suitable for web offset printing because of the high resistance to air permeation and low blister resistance. Hayasaka et al. is directed to a coating color containing a high starch content to provide the desired results. Hayasaka et al. provides no suggestion to one of ordinary skill in the art that the claimed coating color or the coating color of Wurster et al. can be applied at the claimed coating speed of the present invention. Therefore, it would not have been obvious to one of ordinary skill in the art to apply a coating color containing 0.1 to 1.0 parts by weight polyvinyl alcohol and less than 2.0 parts by weight of a starch.

JP '392 also does not provide the deficiencies of Wurster et al. JP '392 only discloses a coating liquid containing a starch or a derivative in an amount of 15-35 parts by weight using a gate roller. JP '392 provides no suggestion that a coating color containing less than 2.0 wt% starch and 0.1 to 1.0 polyvinyl alcohol can be applied using a gate roller at the claimed coating speeds. Thus, it would not have been obvious to one of ordinary skill in the art to apply the claimed coating color at the claimed coating speed and at the claimed ratio of the inner and outer rollers to the applicator roller as in claim 5. Therefore, claim 5 is not obvious over the combination of the cited patents.

The cited patents also fail to disclose the coating color containing 18 parts by weight or less of the adhesive as in claim 6, or the coating color being applied at a coating weight of  $7 \text{ g/m}^2$  or more on the base paper as in claim 7, in combination with the steps of claim 5. Accordingly, these claims are also not obvious over the combination of the cited patents.

In view of these amendments and the above comments, reconsideration and allowance are requested.

Respectfully submitted,



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